THE MORTON ARBORETUM

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WATER PROOF PLANTS

While most woody plants react unfavorably to having their root crowns inundated for an extended length of time, many species which occur naturally in hydric habitats will tolerate some flooding without serious injury. The duration of the period during which water covers the roots has an important bearing on possible ill effects, as does the soil type and the time of year in which the flooding occurs. There is less apt to be damage in winter, for example, especially when there is a deep penetration of frost in the ground than during the growing season when a saturated soil will soon interfere with normal root aeration. And, in sandy or other light soils standing water is less apt to cause injury than in heavy clay.

In locations where poor drainage results in partial submersion at various times throughout the year and for periods of varied duration, only those plants known to persist under similar conditions in nature are recommended. Where only occasional flooding is to be contended with, however, the number of plants tolerant of such conditions is much greater, as is the list of subjects adaptable to moist soil. The latter comprises most bottomland species of trees, shrubs and vines.

PLANTS MOST TOLERANT OF STANDING WATER

Acknowledging the fact that few woody plants can be expected to survive permanent flooding, experimental studies of the effects of water impoundment on tree mortality and growth have shown certain species of trees and shrubs to possess greater resistance than others, especially if their root crowns are not permanently submerged.[1] The following are examples.

TREES

*Green Ash *Fraxinus pennsylvanica lanceolata*

Medium sized, narrow leaved Ash known for its tolerance of climatic extremes. Withstands drouth and flooding equally well.

Tamarack, American Larch — *Larix laricina*

An extremely hardy species with tufted gray green needles. Prefers a damp, swampy soil.

*Black Willow — *Salix nigra*

Our commonest native arborescent willow. Has very dark bark and long tapering leaves green on both surfaces.

Bald Cypress — *Taxodium distichum*

Water loving deciduous conifer with fern-like foliage. Develops characteristic "knees" when inundated.

Arborvitae — *Thuja occidentalis*

Flat leaved, pyramidal conifer useful in wet locations.

SHRUBS

*Buttonbush — *Cephalanthus occidentalis*

A glossy leaved rounded shrub with fragrant spherical white flower clusters in July; prefers wet locations.

Siberian Dogwood — *Cornus alba sibirica*

Bright coral twigged dogwood useful for waterside planting.

*Redosier Dogwood — *Cornus stolonifera*

A stoloniferous dark red stemmed bush extremely tolerant of low, swampy sites.

Yellowtwig Redosier Dogwood — *Cornus stolonifera flaviramea*

A yellow stemmed variety of the above.

*Texas Forestiera — *Forestiera acuminata*

Deciduous shrub with light green foliage, greenish flowers and purple fruit; tolerates standing water.

*Possumhaw — *Ilex decidua*

A southern variation of the Winterberry with glossy foliage and decorative red fruit; likes wet feet.

Winterberry, Black Alder — *Ilex verticillata*

Ornamental deciduous holly noted for its profuse red fruit display; frequents swamp land.

PLANTS TOLERANT OF TEMPORARY FLOODING

Temporary flooding has proved to be considerably less injurious to plants, many subjects showing no ill effects whatsoever unless the condition persists longer than several days. If flooding occurs during the spring or summer months it is not unusual for any foliage which has been under water to turn brown, but as a rule no permanent injury to the plant results.

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[1]Ref. Green, William E. "Effect of Water Impoundment on Tree Mortality and Growth"—Journal of Forestry 45:2, Feb. 1947, p 118.

*Especially tolerant of standing water.

Balsam Fir *Abies balsamea*
The favorite Christmas tree, a moisture loving species best adapted to more northern areas.

Red or Swamp Maple *Acer rubrum*
Attractive maple of swampy lowlands with showy red flowers and bright red fall foliage color.

Silver Maple *Acer saccharinum*
A fast growing maple preferring moist locations.

Ohio Buckeye *Aesculus glabra*
Oval headed tree with bold foliage and creamy flower spikes.

European Alder *Alnus glutinosa*
A picturesque, usually multiple-stemmed tree for waterside planting; catkins decorative.

Sweet Birch *Betula lenta*
An attractive birch with cherry-like bark and golden yellow fall foliage color.

Yellow Birch *Betula lutea*
Yellowish or silvery barked tree of moist habitats.

River Birch *Betula nigra*
Moisture loving species with shaggy orange tan bark.

Hackberry *Celtis occidentalis*
A shapely shade tree resembling American Elm in general contour.

Black Ash *Fraxinus nigra*
Gray barked, black budded species preferring swampy soil.

Red Ash *Fraxinus pennsylvanica*
Medium sized tree of swampy lowlands.

Sweet Bay *Magnolia glauca* (*syn. virginiana*)
Persistent leaved Magnolia with very fragrant white flowers; prefers swampy soil.

Sour Gum *Nyssa sylvatica*
Very picturesque tree of swampy margins; fall color brilliant red.

Black Spruce *Picea mariana*
Pyramidal species known for its tolerance of swampy areas.

Sycamore *Platanus occidentalis*
Fast growing moisture loving tree of majestic bearing; bark decorative.

Cottonwood *Populus deltoides*
Fast growing, water tolerant tree.

Quaking Aspen *Populus tremuloides*
Gray barked small tree known for its quaking foliage.

Swamp White Oak *Quercus bicolor*
Round headed, felty leaved oak inhabiting river banks and swamp margins.

Pin Oak *Quercus palustris*

Fast growing, glossy leaved oak of shapely pyramidal habit; red fall color.

Redstem Willow *Salix alba chermesina*

Upright pyramidal tree with showy orange red bark.

Golden Weeping Willow *Salix alba tristis*

Drooping branched species with decorative golden yellow bark.

American Elm *Ulmus americana*

Our most gracefully shaped native deciduous tree.

SHRUBS

Speckled Alder *Alnus incana*

Brookside shrub with decorative catkins, polished speckled brown bark and variable shaped dark green foliage.

Red Chokeberry *Aronia arbutifolia*

Erect shrub with pinkish tinted white flowers, red fall foliage color and persistent red fruit.

Glossy Black Chokeberry *Aronia melanocarpa elata*

Shiny black fruited bush of more shapely appearance; fall color bright red.

Spicebush *Benzoin aestivale*

Precocious flowering shrub (yellow) native of wet, partly shaded places; fall foliage color yellow.

Summersweet *Clethra alnifolia*

Shiny leaved, July blooming shrub with white flower spikes of spicy fragrance. Occurs naturally in marshy spots.

Silky Dogwood *Cornus amomum*

June flowering species common along the borders of swamps and in other low, wet places; foliage silky downy; fruit bright blue; twigs purplish red.

Leatherwood *Dirca palustris*

Rounded shrub of wet partially shaded places known for its very pliable twigs. Produces yellow flowers in April before the leaves and has yellow fall foliage color.

Mountain Ninebark *Physocarpus monogynus*

Dwarf (to 5 ft.) Ninebark with white flower clusters and good foliage which turns orange terra cotta in fall; likes moist sites.

Bush Cinquefoil *Potentilla fruticosa and vars.*

Dense, fine textured shrub producing small white or yellow flowers from mid-May into September.

Swamp Rose *Rosa palustris*

Swamp loving shrub bearing single rose pink flowers in June and red fruit in autumn.

Flowering Raspberry *Rubus odoratus*

Bold light green leaved shrub of moist, partly shaded areas known for its rose pink flowers and flat, raspberry-like fruit.

Hoary Willow *Salix candida*

Sprawling dwarf bog inhabitant whose leaves and young shoots are covered with a dense, white wooly tomentum; catkins showy.

Goat Willow *Salix caprea*

One of the best of the pussywillows grown for showy catkins.

Pussy Willow *Salix discolor*

Erect species whose black buds open into attractive catkins.

Purple Osier *Salix purpurea*

Dense purple stemmed species with fine textured foliage and small gray catkins.

American Elderberry *Sambucus canadensis*

Familiar native shrub with fragrant white flower clusters in summer and abundant purple fruit. A denizen of moist places.

Hardhack, Steeple-bush *Spiraea tomentosa*

Swamps and lowlands are the favorite haunts of the erect branched Steeple-bush with its dense terminal panicles of rosy pink (July-Sept.)

Coralberry *Symphoricarpos orbiculatus*

Low growing river bank shrub producing prodigious quantities of purplish red berries of long persistence.

Arrowwood Viburnum *Viburnum dentatum*

Erect branched shrub with white flowers in May, blue fruit in early autumn and showy foliage coloration later; occurs in low moist ground.

Nannyberry Viburnum *Viburnum lentago*

Vigorous species with effective white flowers, black fruit and shiny leaves turning reddish and purple in autumn.

American Cranberrybush Viburnum *Viburnum trilobum*

Red fruited Viburnum useful for naturalistic planting; flowers and fall foliage color effective.

VINES

American Bittersweet *Celastrus scandens*

Twining vine of vigorous habit valued especially for its yellow coated red fruit and yellow fall foliage color.

Fox Grape *Vitis labrusca*

Dark leaved wild grape with purplish black or brownish red fruit.

Riverbank Grape *Vitis riparia*

A high climbing wild grape with fragrant flowers and purplish black fruit with a "bloom". Inhabits moist situations.

E. L. Kammerer

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Swamp White Oak, *Quercus bicolor,* a moisture loving native tree uneffected by periodic flooding.